

Standards-based Assessment Bank
3rd Grade Mathematics
Geometry and Spatial Sense

Index to Questions

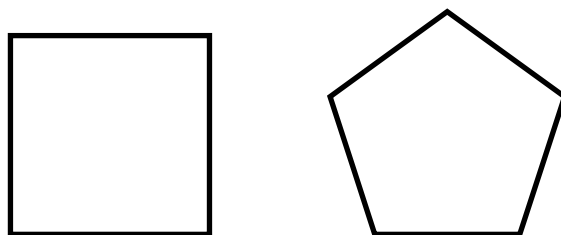
Question Number	Source	BM	GLI	Description
5	OAT March 05	H		This short-answer question asks students to draw lines of symmetry for regular polygons.
9	OAT March 05	A		This multiple-choice question asks students to select a shape with the same characteristics as other shapes.
13	OAT March 05	D		This multiple-choice question asks students to identify a right angle.
19	OAT March 05	E		This multiple-choice question asks students to identify attributes of a cylinder.
24	OAT March 05	E		This multiple-choice question asks students to compare characteristics of a group of triangles.
28	OAT March 05	E		This multiple-choice question asks students to recognize a representation of a three-dimensional shape.
40	OAT March 05	G		This multiple-choice question asks students to identify the coordinates of an object.
43	OAT March 05	E		This multiple-choice question asks students to count the number of faces on a square pyramid.
43	OAT March 06	A		This multiple-choice question asks students to identify attributes of two shapes that are alike.
6	OAT May 07	D		This multiple-choice question asks students to find the number of right angles in the given shape.
9	OAT May 07	A		This multiple-choice question asks students to choose an object based on the given description having only 1 vertex and 1 flat face.
14	OAT May 07	D		This multiple-choice question asks students to identify the angle with the largest measure from the given angles.
45	OAT May 07	E		This multiple-choice question asks students to recognize the shape of the given group of objects.

Standards-based Assessment Bank
3rd Grade Mathematics
Geometry and Spatial Sense

Benchmark: H	Identify and describe line and rotational symmetry in two-dimensional shapes and designs.
GLI:	

Short Answer Question:

5. Draw two lines of symmetry for each shape. You may use your ruler.



Commentary:

This short-answer question asks students to draw lines of symmetry for regular polygons. A response earning the maximum number of points (2 points) shows at least two of the four possible lines of symmetry for the square and at least two of the five possible lines of symmetry for the regular pentagon. Including additional lines that are not lines of symmetry reduces the number of points earned.

The level of complexity for this question is Low Complexity. The task requires student to recall a fact (definition of line of symmetry) and then draw a simple geometric figure (the line of symmetry).

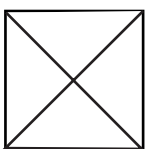
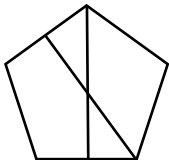
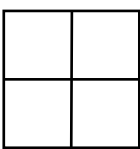
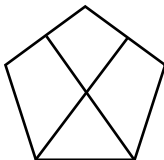
Performance Data:

The percent of public school students earning each score point for question 5 on the March 2005 Grade 3 Achievement Test:

Percent at Each Score Point		
0	1	2
8%	69%	21%

Standards-based Assessment Bank
3rd Grade Mathematics
Geometry and Spatial Sense

Scoring Guidelines:

Points	Student Response
2	<p>The response shows two correct lines of symmetry for each shape with no incorrect lines.</p> <div style="display: flex; align-items: center; justify-content: center;">   OR   </div> <p>NOTE: The square may have a combination of vertical/horizontal and diagonal lines. The pentagon should only have lines from a vertex to the midpoint of the opposite side.</p>
1	<p>The response shows at least one correct shape with or without incorrect line(s).</p> <p style="text-align: center;">OR</p> <p>The response shows two correct lines of symmetry for one figure.</p>
0	<p>The response indicates no understanding of the concept or task.</p>

Keywords: spatial sense, symmetry

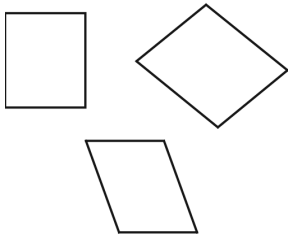
Standards-based Assessment Bank
3rd Grade Mathematics
Geometry and Spatial Sense

Benchmark: A	Provide rationale for groupings and comparisons of two-dimensional figures and three-dimensional objects.
GLI:	

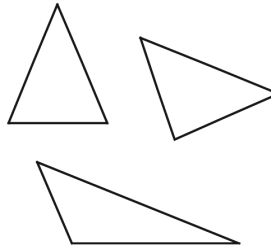
Multiple Choice Question:

9. Two groups of shapes are shown below.

Group 1

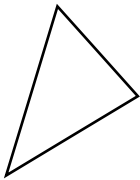


Group 2

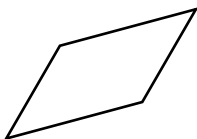


Which shape belongs in Group 2?

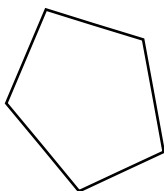
A.



B.



C.



Standards-based Assessment Bank
3rd Grade Mathematics
Geometry and Spatial Sense

Commentary:

This multiple-choice question asks students to select a shape with the same characteristics as other shapes. Students are shown two groups of shapes and asked to select a shape that fits into one of the groups. The correct choice, answer choice A, fits into Group 2 because all the shapes in Group 2 are triangles. Answer choices B and C are incorrect because they have too many sides.

The level of complexity for this question is Moderate Complexity. Students are asked to compare figures.

Performance Data:

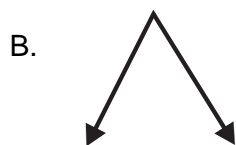
The percent of public school students selecting answer choice A for question 9 on the March 2005 Grade 3 Achievement Test was 91%.

Keywords: geometry, comparisons

Benchmark: D	Identify and draw right, obtuse, acute and straight angles.
GLI:	

Multiple Choice Question:

13. Which picture shows a right angle?



Standards-based Assessment Bank
3rd Grade Mathematics
Geometry and Spatial Sense

Commentary:

This multiple-choice question asks students to identify a right angle. Students are likely to refer to a common referent for a right angle. They may compare the pictures to a corner of a book or a piece of paper, or the corner of a room. Answer choice C appears to be a right angle. Answer choice A appears to be an obtuse angle, and answer choice B is an acute angle.

The level of complexity for this question is Low Complexity. Students recognize an example of a concept (a right angle).

Performance Data:

The percent of public school students selecting answer choice C for question 13 on the March 2005 Grade 3 Achievement Test was 69%.

Keywords: geometry, right angle

Benchmark: E	Use attributes to describe, classify and sketch plane figures and build solid objects.
GLI:	

Multiple Choice Question:

19. John placed this can on a piece of paper. He traced around the bottom of the can.



What shape did he draw?

- A. triangle
- B. rectangle
- C. circle

Standards-based Assessment Bank
3rd Grade Mathematics
Geometry and Spatial Sense

Commentary:

This multiple-choice question asks students to identify attributes of a cylinder. Students are asked to recognize that the base of a can is a circle. Answer choice C is the correct answer.

The level of complexity of this question is Moderate Complexity. Students are asked to interpret the visual representation of the can.

Performance Data:

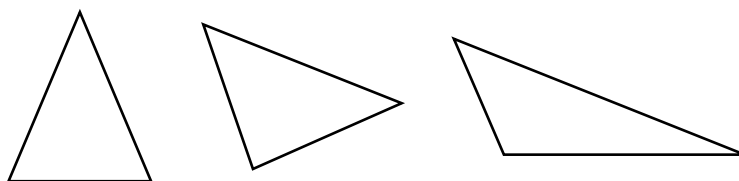
The percent of public school students selecting answer choice C for question 19 on the March 2005 Grade 3 Achievement Test was 95%.

Keywords: geometry, attributes

Benchmark: E	Use attributes to describe, classify and sketch plane figures and build solid objects.
GLI:	

Multiple Choice Question:

24. A group of triangles is shown below.



Which is true about all triangles?

- A. All have three angles.
- B. All have four sides.
- C. All are three-dimensional shapes.

Standards-based Assessment Bank
3rd Grade Mathematics
Geometry and Spatial Sense

Commentary:

This multiple-choice question asks students to compare characteristics of a group of triangles. The correct answer is choice A. All triangles have 3 sides, 3 angles and are two-dimensional shapes.

The level of complexity for this question is Moderate Complexity. This question requires students to compare figures.

Performance Data:

The percent of public school students selecting answer choice A for question 24 on the March 2005 Grade 3 Achievement Test was 85%.

Keywords: geometry, attributes, triangles

Standards-based Assessment Bank
3rd Grade Mathematics
Geometry and Spatial Sense

Benchmark: E	Use attributes to describe, classify and sketch plane figures and build solid objects.
GLI:	

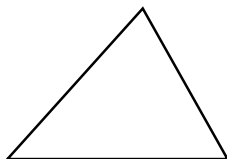
Multiple Choice Question:

28. Which shape is three-dimensional?

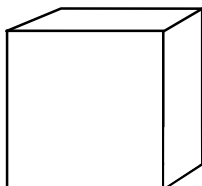
A.



B.



C.



Commentary:

This multiple-choice question asks students to recognize a representation of a three-dimensional shape. Three-dimensional shapes have length, width and depth, so answer choice C is the correct answer. Answer choices A and B have only length and width.

The level of complexity for this question is Low Complexity. This question requires students to recognize an example of a three-dimensional shape.

Performance Data:

The percent of public school students selecting answer choice C for question 28 on the March 2005 Grade 3 Achievement Test was 66%.

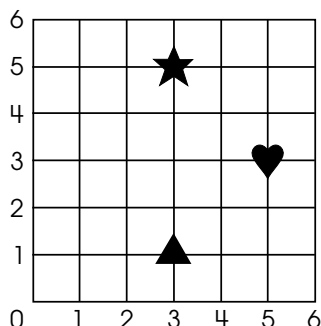
Standards-based Assessment Bank
3rd Grade Mathematics
Geometry and Spatial Sense

Keywords: geometry, three-dimensional

Benchmark: G	Find and name locations in coordinate systems.
GLI:	

Multiple Choice Question:

40. What is the location of the star on the grid?



- A. (3, 1)
- B. (3, 5)
- C. (5, 3)

Commentary:

This multiple-choice question asks students to identify the coordinates of an object. To find the coordinates of the star, students should notice that it is lined up with 3 on the horizontal axis (over 3) and 5 on the vertical axis (up 5). So, the correct answer is answer choice B, (3, 5). Answer choices A and C may be the result of forgetting that the horizontal coordinate (over) should always be placed in the first position and the vertical coordinate in the second position.

The level of complexity for this question is Low Complexity. This question requires students to recall how points are plotted.

Standards-based Assessment Bank
3rd Grade Mathematics
Geometry and Spatial Sense

Performance Data:

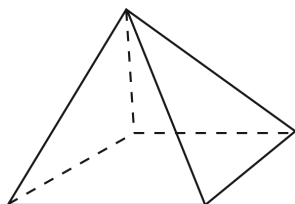
The percent of public school students selecting answer choice B for question 40 on the March 2005 Grade 3 Achievement Test was 72%.

Keywords: geometry, coordinates

Benchmark: E	Use attributes to describe, classify and sketch plane figures and build solid objects.
GLI:	

Multiple Choice Question:

43. How many faces does this solid have?



- A. 4
- B. 5
- C. 6

Commentary:

This multiple-choice question asks students to count the number of faces on a square pyramid. The correct answer is choice B. The pyramid has 4 lateral faces (one on the right side, one on the left side, one on the front, and one on the back) and one face that is the base (bottom) of the pyramid. Answer choice A is the result of not counting the base as one of the faces. Answer choice C is the number of faces on other familiar solids, e.g., cubes and rectangular prisms.

The level of complexity for this question is Low Complexity. This question requires students to recall the meaning of a term (face).

Standards-based Assessment Bank
3rd Grade Mathematics
Geometry and Spatial Sense

Performance Data:

The percent of public school students selecting answer choice B for question 43 on the March 2005 Grade 3 Achievement Test was 64%.

Keywords: geometry, face, spatial sense

Benchmark: A	Provide rationale for groupings and comparisons of two-dimensional figures and three-dimensional objects.
GLI:	

Multiple Choice Question:

43. In which way are these two shapes alike?



- A. Both seem to have at least one right angle.
- B. Both have all sides of equal length.
- C. Both have four vertices.

Commentary:

This multiple-choice question asks students to identify attributes of two shapes that are alike. The correct answer choice is A. Students should recognize that both shapes appear to have at least one right angle as a common attribute. Answer choice B can be eliminated because neither of the shapes appears to have all equal sides. Answer choice C can be eliminated because only one of the two shapes has four vertices.

The complexity level of this question is Moderate Complexity. The question requires students to interpret visual representations and compare statements.

Standards-based Assessment Bank
3rd Grade Mathematics
Geometry and Spatial Sense

Performance Data:

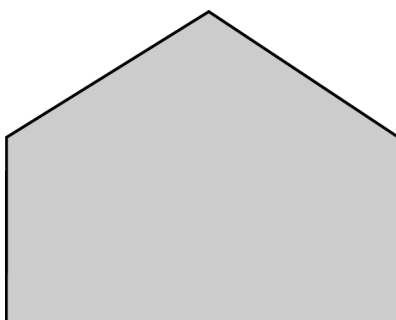
The percent of public school students selecting answer choice A for question 43 on the March 2006 Grade 3 Achievement Test was 81%.

Keywords: geometry, attribute

Benchmark: D	Identify and draw right, obtuse, acute and straight angles.
GLI:	

Multiple Choice Question:

6. How many right angles are in this shape?



- A. 1
- B. 2
- C. 3

Commentary:

This multiple-choice question asks students to find the number of right angles in the given shape. The correct answer choice is B. Students should recognize that two bottom angles in the shape are similar to those found in a square or in a rectangle, which are shapes that have all right angles.

Students picking answer choices A and C may have miscalculated the number of right angles or may have misinterpreted angles as being right angles.

Standards-based Assessment Bank
3rd Grade Mathematics
Geometry and Spatial Sense

The complexity level of this question is Low Complexity. This question requires students to recognize an example of a concept.

Performance Data:

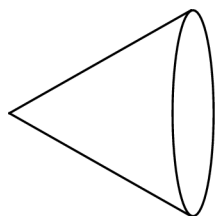
The percent of public school students selecting answer choice B for question 6 on the May 2007 Grade 3 Achievement Test was 78%.

Keywords: geometry, angles, right angles

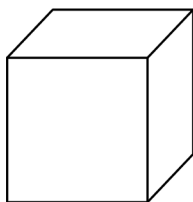
Benchmark: A	Provide rationale for groupings and comparisons of two-dimensional figures and three-dimensional objects.
GLI:	

Multiple Choice Question:

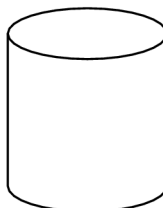
9. Parker has the 3 objects shown.



Cone



Cube



Cylinder

He chooses one object and describes it as having only 1 vertex and only 1 flat face.

Which object did Parker choose?

- A. cone
- B. cube
- C. cylinder

Standards-based Assessment Bank
3rd Grade Mathematics
Geometry and Spatial Sense

Commentary:

This multiple-choice question asks students to choose an object based on the given description having only 1 vertex and 1 flat face. The cone, the cube and the cylinder are three dimensional objects. Students should recognize their faces and the vertices.

The vertex of a cone is a pointy part of a cone. The vertex of the cube is a place where three edges meet. The face of the cone, the cylinder or the cube is their flat surface.

The cone has only 1 vertex and only 1 flat face. The cube has 6 flat faces and 8 vertices.

The cylinder has 2 flat faces and no vertices. So, the correct answer choice is A.

The complexity level of this question is Low Complexity. This question requires students to recognize an example of a concept.

Performance Data:

The percent of public school students selecting answer choice A for question 9 on the May 2007 Grade 3 Achievement Test was 89%.

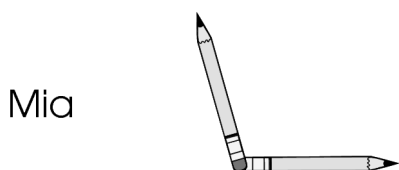
Keywords: geometry, cube, cone, cylinder, vertex, face

Standards-based Assessment Bank
3rd Grade Mathematics
Geometry and Spatial Sense

Benchmark: D	Identify and draw right, obtuse, acute and straight angles.
GLI:	

Multiple Choice Question:

14. Amy, Mia and Sam made angles with two pencils.



Who made the angle with the largest measure?

- A. Amy
- B. Mia
- C. Sam

Commentary:

This multiple-choice question asks students to identify the angle with the largest measure from the given angles. The measure of an angle depends on the amount of opening from one side to the other side. The angle with the largest measure is the angle with the largest amount of rotation from one side to the other side. Students may use a right angle as a referent to compare the sizes of the angles. Answer choice A is the correct because it is significantly larger than a right angle.

Answer choice B is incorrect because it is slightly larger than a right angle. Answer choice C is also incorrect because it is smaller than a right angle.

Standards-based Assessment Bank
3rd Grade Mathematics
Geometry and Spatial Sense

The complexity level of this question is Low Complexity. This question requires students to recognize an example of a concept.

Performance Data:

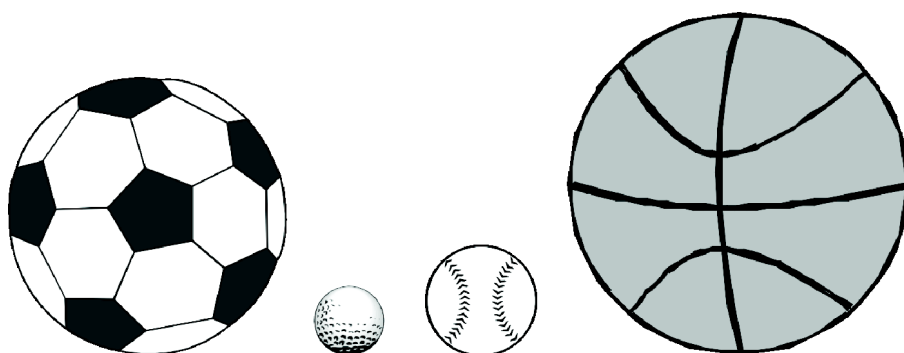
The percent of public school students selecting answer choice A for question 14 on the May 2007 Grade 3 Achievement Test was 69%.

Keywords: geometry, right angle, measure

Benchmark: E	Use attributes to describe, classify and sketch plane figures and build solid objects.
GLI:	

Multiple Choice Question:

45. What is the shape of these objects?



- A. cone
- B. cylinder
- C. sphere

Standards-based Assessment Bank
3rd Grade Mathematics
Geometry and Spatial Sense

Commentary:

This multiple-choice question asks students to recognize the shape of the given group of objects. Answer choice C is the correct answer. Spheres are three-dimensional objects, commonly described as balls, where each point of their surface is equidistant from their center.

Students choosing answer choice A may have confused a cone with a sphere, but cones have one flat face and one vertex (a pointy part). Spheres do not have any flat faces or vertices. Students, choosing answer choice B, may have confused a cylinder with a sphere, but cylinders have two flat faces and spheres do not have any flat faces.

The complexity level of this question is Low Complexity. This question requires students to recognize an example of a concept.

Performance Data:

The percent of public school students selecting answer choice C for question 45 on the May 2007 Grade 3 Achievement Test was 88%.

Keywords: geometry, sphere, cylinder, cone
